Name: Period:

**Water Quality Testing + Information Regarding All Tests**

Physical:

* Stream cover – What percentage of stream is covered by plants? What types of plants are surrounding the stream? How might the types of plants effect the stream?
* Depth of stream – How deep is the stream? Take 3 measurements (from the bottom surface to the tip of water) at different locations and average them.
* Flow rate – How fast is the stream flowing? Find a start and finish location ranging 7 feet apart. Person A holds one end of string and Person B holds the opposite end of string. Person A drops floating object along string when Person B says start, using the timer. Person B stops the timer when the floating object arrives. To be completed 3 times and averaged
* Width of stream – How wide is the stream? Take 3 measurements (from one side to the other) at 3 different locations and average them.
* Odor – What does it smell like? Any unique smells?
* Color – What color is the water? What color is the mud on the bottom?
* Temperature of water and air – Use thermometer to take both the temperature of the air and water

Chemical:

* Total alkalinity – measures the ability to keep the pH from changing
  + Important because it keeps the water protected from shifts in pH; less vulnerable to acid rain
    - 50 ppm is low
    - 200 ppm is high
* Acidity/pH – measures the hydrogen ion concentration
  + pH <7 is acidic
  + pH>7 is basic
  + Normal range is 6.7-8.6
* Total hardness – measures the calcium and magnesium
  + Soft = 0-60 ppm
  + Hard = 121-180 ppm
  + Very Hard = >180 ppm
* Dissolved oxygen – measures the amount of oxygen dissolved in water
  + Most important gas for aquatic organisms
    - The colder the water, the more DO
    - The faster the flow, the more DO
      * 5-6 ppm sufficient
      * <3 stressful to most
      * <2 fatal to most
* Nitrates – measures the fertilizer/organic matter in water
  + Important because plants need nitrogen in that form for survival
    - 1 mg/L = 1 ppm
* Turbidity – measures the cloudy appearance of water
  + Major indicator on how well light passes through the water; light is needed for plants to photosynthesize, as well as helping with the production of oxygen
    - <5 JTU’s

Biological:

* Macroinvertebrates – organisms without backbones large enough to be seen with the naked eye and live on the bottom of a stream
* Collected in riffles, places where water flows quickly
* 3 groups
  + 1 = Sensitive to water pollution
    - caddisfly, hellgrammite (dobsonfly), mayfly, stonefly larva, riffle beetle, and water penny
  + 2 = Somewhat sensitive to water pollution
    - alderfly, riffle beetle larva, cranefly, damselfly, dragonfly larva, fishfly, sowbug larva, whirligig beetle larva, scud larva, and watersnipe fly
  + 3 = Tolerant to water pollution
    - Aquatic worm, blackfly larva, midgefly, leech